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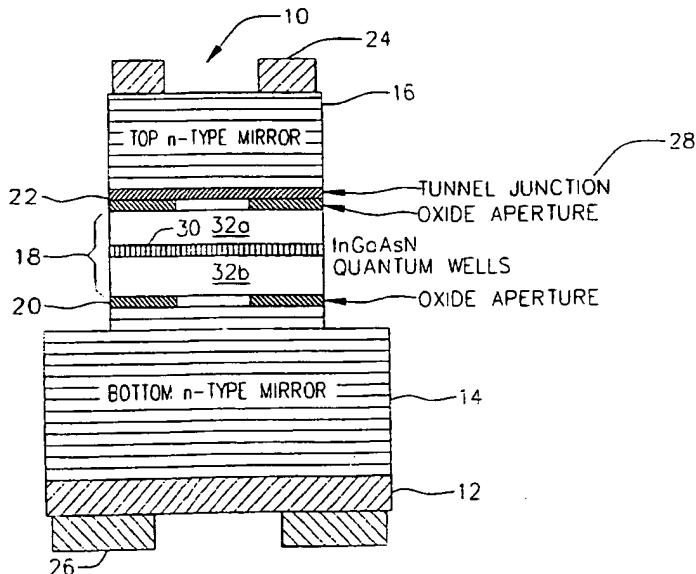
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(54) Title: LONG WAVELENGTH VERTICAL CAVITY SURFACE EMITTING LASER



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(57) Abstract: Selectively oxidized vertical cavity lasers emitting near 1300 nm using InGaAsN quantum wells are reported for the first time which operate continuous wave below, at and above room temperature. The lasers employ two n-type Al<sub>0.94</sub>Ga<sub>0.06</sub>As/GaAs distributed Bragg reflectors each with a selectively oxidized current aperture adjacent to the active region, and the top output mirror contains a tunnel junction to inject holes into the active region. Continuous wave single mode lasing is observed up to 55 °C.

## INTERNATIONAL SEARCH REPORT

Inte  
nal Application No  
PCT/US 01/17548

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 H01S5/183

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 H01S

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, INSPEC

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 822 630 A (HEWLETT PACKARD CO) 4 February 1998 (1998-02-04)	1-3, 9-13, 19-23
Y	abstract; claims 1,2; figure 1  column 7, line 54 -column 8, line 17	1-6, 9-17, 19-23
Y	WO 98 07218 A (GORE & ASS) 19 February 1998 (1998-02-19)  page 8, line 12; figure 2	1-6, 9-17, 19-23
		-/-

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International Application No

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Patent document cited in search report		Publication date		Patent family member(s)	Publication date
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WO 9807218	A	19-02-1998	AU WO	3600697 A 9807218 A1	06-03-1998 19-02-1998